Introductory Lab Module in Ecology and Evolutionary Biology

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Teaching Assistants: TBD
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The information contained in this course syllabus, other than the absence policies, may be subject to change with reasonable advance notice, as deemed appropriate by the instructor.

Course Website: https://owlspace-ccm.rice.edu/portal/site/EBIO-213-F16

Course Description:
This is a two credit, half-semester course (beginning after Midterm Recess) that introduces students to the science of ecology and evolutionary biology through hands-on, inquiry-based laboratory and field exercises. Class meetings take place twice a week. There is a lecture on Mondays that introduces the week's topic; students also attend one of two afternoon lab sections (Tuesday or Wednesday), which provide practical experiences in natural history, data collection and analysis, and the communication of results.

Course Learning goals:
By the end of the course, you will be expected to know and be able to do the following things:

- **Generate a valid scientific hypothesis** and suggest several feasible ways to test it;
- **Perform basic statistical analyses,** including t-tests and Chi-squared tests;
- **Search for and locate peer-reviewed research articles** and extract meaningful information;
- **Create a scientific report** using appropriate format, terminology, grammar, citations, and figures;
- **Demonstrate competence in basic skills** in ecology and evolutionary biology:
    - Conduct a biological species inventory, quantify the diversity of the samples collected and assess the results;
    - Distinguish between ecosystems, habitats, and microhabitats and provide examples of each;
    - Identify abiotic and biotic factors that determine a species geographic range and explain how these contribute to an organisms' fundamental and realized niche;
    - Provide examples of invasive species and their impacts on native ecosystems;
    - Determine the spatial dispersion pattern of individuals across a landscape;
    - Conduct and interpret basic behavioral assays;
    - Explain the role of taxonomy in systematics and its importance to the biological sciences;
    - Approximate the number of living species on the planet and their relative distribution

across the tree of life; and
- Reconstruct and interpret a phylogenetic tree.

Location and Time:
On Mondays, lectures are from 3-3:50 PM. Labs are on Tuesdays and Wednesdays from 1–5 PM. The lecture meets in **Brockman 101 (BRK 101)**; all labs meet in **Anderson Biology Labs 125 (ABL 125).** Due to space constraints, ***students must attend the lab section for which they are officially enrolled.***

Course Schedule:

Week	Date	Topic
Week 1	Oct. 17	Lecture: Intro to conducting research in ecology and evolution
	Oct. 18, 19	Lab 1: Squirrel behavior (around campus)
Week 2	Oct. 24	Lecture: Population biology and basic statistics
	Oct. 25, 26	Lab 2: Isopod population biology (around campus)
Week 3	Oct. 31	Lecture: Introduction to local ecosystems
	Nov. 1, 2	Lab 3: Local ecosystems (Field trip – return by 7 pm)
Week 4	Nov. 7	Lecture: Measuring biological diversity
	Nov. 8, 9	Lab 4: Biodiversity of leaf litter organisms (in lab)
Week 5	Nov. 14	Lecture: Taxonomy and systematics
	Nov. 15, 16	Lab 5: Reconstructing evolutionary history (in lab)
	Nov. 21-23	*No Class – Thanksgiving Recess*
Week 6	Nov. 28	Lecture: Molecular evolutionary genetics
	Nov. 29, 30	Lab 6: The Tree of Life and molecular sequence data (in lab)

Requirements:
Quizzes:
Immediately following each Monday lecture, an Owl-Space quiz will be made available to students. Each of the six quizzes consists of 5 multiple-choice questions (worth 2 points each, for a total of 10 points/quiz) that cover the assigned readings for that week's lab, as well as content from the associated Monday lecture. **Each weekly quiz will be available from Monday at 3:50 PM through Wednesday at 12:59 PM.** Students are responsible for remembering to take their quiz each week; **quizzes will not be accessible after Wednesday at 12:59 PM** (unless a student is ill and contacts Dr. Correa ***before*** the quiz has closed).

Students are required to attend all labs. Students must attend the lab section for which they are registered (unless they are ill, in which case they must contact Dr. Correa ***before*** their scheduled class). Course announcements will be posted on Owl-Space and sent to students' Rice email addresses; students are responsible for regularly checking both the course Owl-Space site and their email accounts.

Field Trip:
The third lab (November 1, 2) will take place off campus. Transportation will be provided and will leave from campus. Because of the travel time (about an hour each way), plan to return to campus around 7 pm. ***Students must be prepared to get dirty and wet;*** recommended clothing includes long pants, boots or old tennis shoes, a hat, sunscreen, insect repellent, a raincoat or

poncho. Students are also advised to bring water and a snack.

Lab reports:
For each lab, students will complete an exercise during the scheduled class time (note that these hours will be extended for the Lab 3 field trip). ***Lab reports will be submitted electronically and will be due by Monday at noon the week following each lab.*** Reports submitted after the deadline will be penalized one letter grade per 24 hours late.

Grading:
Grades for this course are based on quizzes taken on Owl-Space following each lecture and lab write-ups due at the start of lab the following week. The course is graded on a straight scale, with the following cutoffs for final grades (97.5-100% = A+; 92.5-97.4 = A; 89.5-92.4 = A-; 87.5-89.4 = B+; 82.5-87.4 =B; 79.5-82.5 = B-; 77.5-79.4 = C+; 72.5-77.4 = C; 69.5-72.4 = C-; 67.5-69.4 = D+; 62.5-67.4 = D; 59.5-62.4 = D-; <59.5% = F) and points are assigned as follows:

Assignment	**Points / Assignment**	**# Assignments**	**Subtotal**	**% of final grade**
Lab reports 1, 5, 6	30	3	90	30%
Lab reports 2, 3, 4	50	3	150	50%
Quizzes	10	6	60	20%
Total			**300**	**100%**

Readings:
All readings will be available as PDFs on Owl-Space.

Honor Code:
Quizzes are open notes, closed book, and closed Internet. Students are expected to work in groups during in-class laboratory exercises, but all laboratory reports should be completed individually. Any sources used to complete a lab report, including materials provided as part of the class (i.e., lectures and readings posted on Owl-Space), must be properly cited.

Disabilities:
If you have a disability that will impact your work in this class, please speak with the instructor during the first two weeks of class. All discussions will remain confidential. Additionally, you must contact Disability Support Services (http://dss.rice.edu/) located in the Allen Center, Room 111.